

Docket No. JIIL07  
Application No. 10/783,527

## REMARKS

### Status of the Application

Claims 1-4 were previously pending. Claims 1 and 3 were objected to for informalities. Claims 1, 3, and 4 were rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643). Claim 2 was rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643) as applied to claims 1, 3-4, and further in view of Hulse et al. (US 6,550,952). The specification was objected to for informalities.

Applicant has amended claims 1-4 and added new claims 5-10. Applicant has also amended the specification for clarity. No new matter adds through the amendments. For the reasons discussed below, withdrawal of the rejections is requested.

### Specification Objections

Applicant has amended the specification for clarity. A substitute specification is filed herewith. Withdrawal of the objection is requested.

### Claim Objections

Claims 1 and 3 were objected to for informalities.

Claims 1 and 3 have been amended to cure the informalities. Withdrawal of the objection is requested.

### Claim Rejections- 35 U.S.C. 103(a)

Claims 1, 3, and 4 were rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643).

Claim 1 as amended specifies that "the outer layer of said plastic optical fiber is formed with a plurality of depressions for producing a light leak effect, the depressions do not extend into the inner core layer of said plastic optical fiber". Reference '876 does not teach or suggest such features.

In fact, reference '876 specifically teaches that "[E]ach notch (4) extends through the fibre cladding (where present) into the core material". Col. 7, lines 25-27. While in the present invention as defined in claim 1, the depressions are formed only in the outer layer and do not

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extend into the inner core layer. Therefore, reference '876 teaches against the present invention.

Clearly, reference '643 cannot cure the deficiencies of reference '876.

For at least the reasons discussed above, claim 1 is patentable over the cited references.

Claims 3 and 4 depend from claim 1 and, for at least the same reasons, are also patentable over the cited references.

Claim 2 was rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643) as applied to claims 1, 3-4, and further in view of Hulse et al. (US 6,550,952).

Hulse was cited to teach two illuminating devices being coupled with a connector. However, Hulse cannot cure the above discussed deficiencies of reference '876. Therefore, claim 1 as well as its dependent claim 2 are patentable over Appeldorn (US 5,432,876), Appeldorn (US 5,659,643), and Hulse.

### New Claims

New claims 5-10 have been added to more fully protect the present invention. These claims depend from claim 1 and, thus, are patentable. In addition, these dependent claims contain features that further distinguish over the cited references.

For example, claim 5 specifies that "the depressions on the plastic optical bundle are randomly orientated". While reference '876 requires that "[T]he notches (4) on any particular layer must be on the side of the layer (41 and 42) that is remote from the front panel (34)".

Claims 6-10 specify specific shapes of the depressions. While reference '876 requires that notches (4) must have two surfaces 6 and 10 and the two surfaces must meet specific requirements. See col. 7, lines 25-35, col. 8, lines 20-37.

### **Conclusion**

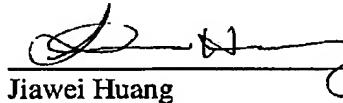
In view of the foregoing amendments and remarks, it is respectfully submitted that the remaining claims 1-10 are now in condition for allowance. Allowance of this application is earnestly solicited.

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Respectively submitted

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## Plastic Optical Fiber Bundle with Pitched Patterned Illumination

### Decorations Depressions

#### Background of the Invention

##### 5 1. Field of the Invention

The present invention is related to plastic optical fiber bundle with spaced illumination decorations depressions, especially to a plastic optical fiber bundle with a pitched destruction patterned depressions on its surface to produce illumination effect.

##### 10 2. Description of the Prior Art

As shown in FIG. 1, ordinary connection lines have a string of bulbs with different colors in a transparent plastic pipes to produce illumination effect. The bulbs 1' of the bulb string structure 1' connect to each other and produce an offending flashing effect when the power is turned on. However, this bulb string structure brings overheat easily and, 15 thus, may cause fire. The production cost of this bulb string structure is high.

##### 3. Summary of the Invention

The objective of the present invention is to provide a "plastic optical fiber bundle with pitched patterned illumination decorations depressions" without the disadvantage of the 20 ordinary connection lines. The outer layer of a plastic optical fiber is formed with depressions destructed based on an appropriate spacing unit before it is finally shaped during the fiber drawing process, so that a spaced or patterned light leak effect is produced at the positions where the surface of the plastic optical fiber is formed with depressions destructed in a spaced manner pattern based on an appropriate spacing unit. 25 The plastic optical fiber bundle with pitched patterned illumination decorations depressions of the present invention has a protection sleeve on its surface and an illumination structure on each end, so that it can be used as an illumination decoration for different applications.

30 The present invention is further described with the following figures:  
FIG. 1 is an ordinary a conventional connection line;

FIG. 2-1 shows the 1st view of the plastic optical fiber bundle of the present invention ~~destructed in a pitched manner~~;

FIG. 2-2 shows the 2nd view of the plastic optical fiber bundle of the present invention ~~destructed in a pitched manner~~;

5 FIG. 2-3 shows the 3rd view of the plastic optical fiber bundle of the present invention ~~destructed in a spaced manner~~;

FIG. 2-4 shows the 4th view of the plastic optical fiber bundle of the present invention ~~destructed in a pitched manner~~;

10 FIG. 3 shows the cross-sectional view of the plastic optical fiber bundle of the present invention ~~destructed in a pitched manner~~;

FIG. 4 shows the light leak schematic view of the plastic optical fiber bundle of the present invention ~~destructed in a pitched manner~~;

15 FIG. 5-1 shows the cross-sectional view of the plastic optical fiber bundle in an embodiment of the present invention; and

FIG. 6 5-2 shows the side view of the plastic optical fiber bundle in an embodiment of the present invention.

#### 4. Detailed Description of the Preferred Embodiments

The present invention is directed to a plastic optical fiber bundle with pitched patterned illumination decorations depressions. PMM A and PTFE B are fed simultaneously to form an outer layer and an inner layers layer, respectively. The materials are molten and extruded and then spun through a spinning nozzle to form a molten two-layer plastic optical fiber. The surface of the molten plastic optical fiber P is formed with depressions destructed in a pitched manner pattern based on an appropriate spacing unit formed by means of a special mold before the molten plastic optical fiber is cooled on a cooling plate. During the destructed process of forming the depressions, only the outer layer is destructed formed with depressions without affecting the inner layer. The plastic optical fiber P with pitched-destructions patterned depressions is distributed with spaced dot-shaped depressions dot-destructions (a) on its surface (FIG. 2-1); The plastic optical fiber P with spaced-destructions patterned depressions is distributed with pitched patterned "+"-shaped depressions (b) and "-"-shaped depressions (c) destructions on its surface

(FIG. 2-2); The plastic optical fiber P with pitched destructions patterned depressions is distributed with pitched patterned square-shaped depressions (d) destructions on its surface (FIG. 2-3); The plastic optical fiber P with pitched destructions patterned depressions is distributed with pitched patterned star-shaped depressions (e) destructions on its surface (FIG. 2-4). As shown in FIG. 3, a plastic optical fiber bundle with pitched patterned illumination decorations depressions (1) is formed by individual plastic optical fibers P<sub>1</sub>, ... P<sub>n</sub> with pitched patterned illumination decorations P<sub>1</sub>-P<sub>n</sub> depressions. A protection sleeve C is put onto the outer layer of the plastic optical fiber bundle with pitched patterned illumination decorations depressions 1.

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The surface of the plastic optical fiber bundle with pitched patterned illumination decorations depressions 1 as shown in FIG. 4 is destructed formed and distributed with holes 01-01n, 02-02n and 03-03n. The plastic optical fiber P with pitched destructions patterned depressions is distributed with spaees spaced regions P', P'', P''' on its surface.

15 When light radiates into the plastic optical fiber P with pitched destructions patterned depressions, the light is refracted to the P', P'', P''' distribution areas to produce a light leak effect distributed in a pitched patterned manner. When the power is turned on and the luminary L illuminates, the plastic optical fiber bundle with pitched patterned illumination decorations depressions 1 produces a light leak and decoration effect that is 20 distributed in the pitched destruction patterned depression areas D1, D1n, D2, D2n. A connector W is installed between the plastic optical fiber bundle with pitched patterned illumination decorations depressions 1 and the plastic optical fiber bundle with pitched patterned illumination decorations depressions 1'' for permanent connection.

25 The present invention is a plastic optical fiber bundle with pitched patterned illumination decorations depressions and the plastic optical fiber producing the light leak effect has the following characteristics:

- (1) The plastic optical fiber is destructed formed with depressions in a spaced manner based on an appropriate unit during the fiber drawing process;
- 30 (2) The plastic optical fiber bundle with pitched patterned illumination decorations depressions of the present invention does not bring overheat or cause fire; and

(3) The connection line with pitched patterned illumination decorations depressions of the present invention radiates soft light that does not offend your people's eyes.

**What is claimed is:**

1. A plastic optical fiber bundle with pitched illumination decorations having a single plastic optical fiber, the surface of said plastic optical fiber being destructed in a pitched manner with a special mold before said plastic optical fiber forwarded to the cooling area, wherein an outer layer of said plastic optical fiber is distributed with pitched destructions formed based on an appropriate unit and only the out layer of said plastic optical fiber is destructed without affecting any inner layer of said plastic optical fiber; a plural of separate plastic optical fibers with pitched destructions form said plastic optical fiber bundle with pitched illumination decorations; said plastic optical fiber bundle produces a light leak effect when a power is turned on and an luminary or a spotlight bulb radiates light; the light is very soft without offending to eyes and can be used for different applications.
- 15 2. A plastic optical fiber bundle as cited in claim 1, wherein a connector is installed between two plastic optical fiber bundles with pitched illumination decorations for permanent connection.
- 20 3. A plastic optical fiber bundle as cited in claim 1, wherein a illumination structure is installed on each end of said plastic optical fiber bundles with pitched illumination decorations.
- 25 4. A plastic optical fiber bundle as cited in claim 3, wherein a luminary or a spotlight bulb is installed in said illumination structure of said plastic optical fiber bundles with pitched illumination decorations.

### Abstract

The present invention is related to a plastic optical fiber bundle with pitched patterned illumination decorations depressions. A single plastic optical fiber is reeled off and spun through a spinning nozzle. The surface of the plastic optical fiber is then destructed 5 formed with depressions in a pitched patterned manner based on an appropriate pitched spaced unit before the plastic optical fiber is cooled in a cooling area. When destructing forming depressions on the plastic optical fiber, only the outer layer is destructed formed with the depressions without affecting the inner layer so as to produce an pitched destruction-and-illumination effect on the surface of the plastic optical fiber. A plastic 10 optical fiber bundle is formed by individual plastic optical fibers with spaced illumination decorations depressions. An illumination structure is installed on each end of the plastic optical fiber bundle with pitched illumination decorations and a luminary or a spotlight bulb is installed in each illumination structure of the plastic optical fiber bundle with 15 illumination decorations. When the power is turned on, the luminary or spotlight bulb radiates light through the plastic optical fiber bundle with illumination decorations depressions. The light is very soft without offending to eyes and can be used for different applications.